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SCIENCE NEWS LETTER

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THE WEEKLY SUMMARY OF CURRENT SCIENCE •

January 27, 1940

Glass

See Page 53

A SCIENCE SERVICE PUBLICATION

Do You Know?

In China, the butterfly is a symbol of immortality.

Italy reports finding in Albania valuable deposits of high grade iron ore.

Out of 11 kinds of milk listed by the Department of Agriculture, reindeer milk is richest—it has 22% butterfat.

The world's population increased nearly five-fold in about three centuries, from 1630 to 1930, says a noted population expert.

Figures of Buddha are made according to exact proportions, which the devout Buddhist regards as established by divine revelation.

Ceylon is worried over a 400% rise in price of acetic and formic acids imported from Germany for rubber processing; and efforts to make acetic acid locally from coconut shells may be launched.

Each domestic science class in Lausanne, Switzerland, has adopted a needy Swiss soldier, taking care of his laundry and mending, and cheering him with class-made cakes and other foods and with friendly letters.

The ten minerals which the War Department lists as strategic—meaning that the United States cannot expect to produce them in sufficient quantities for industrial or wartime needs—are manganese, nickel, chromium, tungsten, tin, aluminum, antimony, mercury, platinum, and mica.

QUESTIONS DISCUSSED IN THIS ISSUE

Most articles which appear in SCIENCE NEWS LETTER *are based on communications to Science Service, or on papers before meetings. Where published sources are used they are referred to in the article.*

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Archaeology

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Chemistry

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Physiology

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Radio

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Sociology—Public Health

How many American children of school age are out of school? p. 51.

Making gears and other articles from metal powders is one of the newer fields of metallurgy.

The Pilgrims found cranberries growing wild in Massachusetts bogs, but not until about 1850 did a cranberry industry get started.

A way of spraying hot shellac on wood, glass, and other surfaces is reported by chemists at University College, London.

Cane and beet sugar are chemically identical except for slight impurities which in both kinds make up only a small fraction of one per cent.

SCIENCE NEWS LETTER

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SOCIOLOGY—PUBLIC HEALTH

"Christian Front" Tactics Denounced to Conference

White House Conference on Children in a Democracy Hears of Needs of Youngsters for Health and School

STRONGLY denouncing the Klan, Silver Shirts, and "various so-called 'Christian Front' organizations which belie their name by deliberately stirring up race hatreds," a report on the plight of America's minority children led the White House Conference on Children in a Democracy meeting in Washington to plan ways of helping these child millions.

How many children in the United States fall under the handicap of being treated as minority individuals, even the conference, with its resources of tracing facts, could not be certain. Thirteen million children less than 16 years old are of some race or color other than the majority American pattern of white and native born. Somewhere between five and ten million of these children have problems fitting the modern world's definition of a minority group. The conference worded its own definition: "those subject to prejudice and discrimination whose members can be readily identified by physical and cultural differences."

Most numerous in minority groups are Negro children, but handicaps of discrimination are also felt from time to time, and from place to place, by young Indians, Mexicans, Jews, and some foreign-born, the conference was told.

Handicaps which beset the minority child are apt to be unequal chances for schooling, recreation, medical care, and economic advancement; varying degrees of social exclusion; and most frequent and serious—poverty.

Plea for Tolerance

A plea for greater tolerance and a warning to consider possible results to the United States' future if five to ten million children grow up lacking ordinary opportunities, and with the feeling that they are "different" and "inferior" was sounded in the report on the minority question studied by the conference.

The conference, numbering some 500 members, shaped up a final report and recommendations as to how the United States should improve conditions for all of its 36,000,000 youngest who need a better start in life. Recommendations cover a wide range of needs of young Americans, including adequate schools, play facilities, shelter and security in the home, medical and health provisions, religious teaching, child labor regulations.

"Hard, uncomfortable facts" set forth for the conference to grapple with include such posers as these:

Not merely thousands, but millions of American children belong to families that live in distress or constant insecurity, trapped by economic circumstances from which they cannot escape without outside aid.

More than 26,000,000 people under 20 years of age live where there is no library to provide information and recreation.

One-half the children in the United States get no formal religious instruction, thus getting little or none of the "resources of religion."

One million of the 3,000,000 farm tenant families move each year. And many farm houses are "slum" structures.

Not in School

Nearly 1,000,000 children who are the right ages to be in elementary school are not in school. Hundreds of thousands of boys and girls in migrant, rural, and Negro families have school opportunities rated "deplorable or entirely absent."

In large areas, child workers are exploited in industry on farms, in factories, street trades, domestic service. Many do work that is hazardous or injurious to health.

There are still more than 50,000 deaths of infants each year, between two and twelve months of age, and many of these babies need not die.

Hundreds of thousands of children suffer from physical handicaps which might be corrected.

Problems of children not yet solved include some new to the United States in recent years. Boys and girls who support parents unable to get jobs create one topsy-turvy situation, leading to distorted relations in family life. Smallness of modern families, and the dropping out of uncles, cousins, and aunts from the home circle, narrow down opportunities of young Americans to share their burdens and joys; and the small family does not always adjust to the greater emotional load. These are two random examples of many strange things happening to family patterns and affecting the growing-up years of the new crop of citizens.

But—"however far-reaching these changes, democracy still looks to the family as its foundation," the conferees confidently reported. Taking as a keynote, "the family as the threshold of democracy," a special committee of men and women interested in family problems discussed ways and means whereby a family can give children a good start.

Ways of smoothing out inequalities in chances for an education were discussed by another of the eleven groups into which the conference was divided. Few states parcel out their school funds so that districts with many children and little money get their share of good schooling.

The nation is concentrating most of its educational effort on groups having the fewest children, said a report on education. Farmers support 31% of the country's children on nine per cent of the national income. Educational inequalities have been brought to public attention for over 50 years; something more should be done about it, the meeting was told.

President Roosevelt joined the conference Friday evening, Jan. 19, in the historic East Room of the White House, when the final conference report was presented to him. (*Turn to next page*)

President Roosevelt Says:

"The steps we take today will determine how far we can go tomorrow, and in what direction.

"I believe with you that if anywhere in the country any child lacks opportunity for home life, health protection, education, or moral and spiritual development, the strength of the Nation and its ability to cherish and advance the principles of democracy are thereby weakened.

"I ask all our fellow citizens who are within the sound of my voice to consider themselves identified with the work of this Conference. I ask you all to study and to discuss with friends and neighbors the program it has outlined, and how its objectives can be realized. May the security and happiness of every boy and girl in our land be our concern, our personal concern, from now on."

—President Franklin D. Roosevelt, addressing the White House Conference.

Recommendations from these White House conferences on child welfare, of which this of 1940 is the fourth since 1909, will provide a yardstick for state and city officials and welfare groups, in their planning during the forthcoming decade.

Science News Letter, January 27, 1940

GENETICS

Cousins Recently Born Are Brother and Sisters

CHILDREN with two sets of parents, but brother and sisters, nevertheless. That is how the geneticist sees the case reported in New York of the three babies born to identical twin fathers and identical twin mothers.

Benjamin and Hyman Rubin, identical twins, married Sylvia and Ruth Reisman, also identical twins, according to this report. Now one couple are parents of identical twin girls and the other couple have a boy born just four days before.

The little boy is a cousin of the little girls, but is, genetically speaking, their brother. Since his father is identical in heredity to the father of the girls and since his mother is identical to their mother, he is exactly as closely related to them as though he had been born to the same parents.

This is no mere play upon words, but is scientifically accurate. For identical twins have their origin in a single egg cell. They have drawn exactly the same set of genes in the vital grab-bag of human heredity. So far as the traits they can pass on to their children are concerned, they are interchangeable.

Scientists reserve a special welcome for the birth of identical twins. The reason is that no scientific experiment can be completely satisfactory without the inevitable control. When one laboratory rat is fed a new drug or given a new serum, the effects can be judged only when another rat, otherwise like the experimental animal, goes without—when there is a "control."

In educational or other experiments on man, the "control" is often missing. In the identical twin, Nature provides an ideal control—two human chicks from the same single mother egg cell. Two persons with equal potentialities.

In the Rubin babies, Nature has been more than generous and provided, in addition to this "control," another in the form of another baby born of parents exactly the same genetically and at practically the same time.

Science News Letter, January 27, 1940

PUBLIC HEALTH

Health of Industrial Workers Protected by Examinations

Non-Compulsory Program Worked Out by State Industrial Commission in Wisconsin; Employer Pays

HEALTH of industrial workers in Wisconsin is being protected by a non-compulsory program of physical examination worked out by the state's Industrial Commission, Harry A. Nelson, director of the Workmen's Compensation Department of the commission, reported at the Second Annual Congress on Industrial Health. The congress was held under the auspices of the American Medical Association in Chicago.

The program represents the recommendations of labor organizations, employers, physicians and insurance companies. It is in no way compulsory. It includes standards and safeguards designed to meet the approval of both employers and employes.

In concerns adopting the program, every employe is examined before employment by a physician selected and paid by the employer. Time lost from work by employes and transportation expenses in connection with the examinations are also paid by the employer. Following the pre-employment examination, periodic reexaminations are given at such times as the examining physician directs. The intervals between examinations depends both on the employe's condition and the type of work he is doing.

Conditions threatening the employe's health can be detected by such examinations in time, it is hoped, to ward off the health menace, either by appropriate treatment or by change in working operations and conditions at the plant.

Science News Letter, January 27, 1940

MEDICINE

New Infantile Paralysis Leads May Reveal Way It Spreads

Saliva Will Be Examined for Virus; Disease Spread Now Seems More Like Diphtheria Than Like Typhoid

NEW LEADS on infantile paralysis research make the eventual conquest of this crippling childhood plague seem excitingly near at hand. Research plans announced by Basil O'Connor, president, National Foundation for Infantile Paralysis, show that scientists are following new trails in their search for ways of preventing the disease.

Saliva from mouths of infantile paralysis patients both before paralysis sets in and during the paralytic stage is going to be examined for the virus that causes the disease. The clue for this line of search comes from the recent discovery of the virus in sewage from localities that were gripped by infantile paralysis outbreaks. The virus was also discovered in the intestinal discharges of patients and of healthy persons who did not have infantile paralysis but who had been in contact with patients. This proved the existence of healthy carriers of infantile paralysis, akin to the healthy carriers of typhoid fever.

How do the healthy carriers and the patients spread their germs to others? The saliva tests may give the answer to that question.

Infantile paralysis, it is now believed, spreads more like diphtheria than like typhoid fever. In infantile paralysis, as in diphtheria, there must be direct contact with a patient or a healthy carrier of the germs. In typhoid fever, water or food may spread the germs, which are discharged from the body with its waste matter.

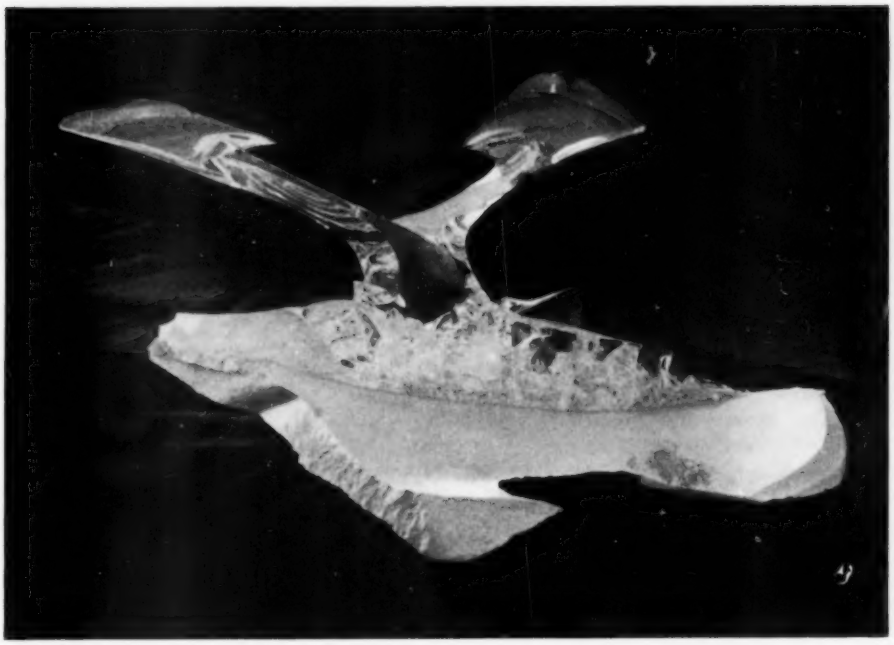
If infantile paralysis germs, discharged with body wastes, were spread by water or food, scientists would expect everyone who used the same water and food sup-

plies to get the disease during epidemics. But they do not. Here is a mystery the scientists hope to clear up.

Another unsolved mystery is where the virus goes in the body of patients. Where do healthy carriers carry their germs? Scientists know the virus travels along nerves, and that when it reaches the nerve cells in the brain and spinal cord it does its chief damage. But for all that is now known, the virus may invade other tissues of the body and hide itself there. Complete information on this point will be sought by examination of all the tissues of the bodies of patients who die of the disease.

If infantile paralysis virus travels from human wastes to contaminate water supplies, will chlorination make the water safe by killing the germs? Scientists believe it will, but when they began thinking about this, they realized that germ-killing chemicals, from carbolic acid, or phenol, down are tested by their power to kill germs that can be seen under the microscope, like the colon bacillus, but not against the invisible virus type of germ. This has led to another line of research, testing the virus-killing power of chemicals, which may help with the problem of infantile paralysis and of other virus-caused diseases.

Science News Letter, January 27, 1940



FREAK OF THE MELTING POT

Out of the melting pots at the National Bureau of Standards in Washington, where scientists produce experimental optical glass, came the queer and unusual glass "airplane" shown above. The glass comes from the melting pots in large pieces which must be broken up into smaller chunks and eventually turned into lenses and prisms. How the glass will break is determined by the internal stresses which develop on cooling. The illustration on the cover of this week's SCIENCE NEWS LETTER shows another such odd shape. Both photographs are by Fremont Davis, Science Service staff photographer.

DENTISTRY

Rub Sex Chemicals on Gums To Prevent Loss of Teeth

Hormones Strengthen Protective Keratin Layer, Keeping Gums Healthy and Giving Resistance to Germs

JUST as women now rub cold cream on their faces, both men and women may soon be rubbing their gums with sex hormone chemicals in order to strengthen them and prevent loss of teeth.

Experiments by Dr. Daniel E. Ziskin of Columbia University's School of Dental and Oral Surgery show that sex hormone preparations treat successfully diseases of the gums by "armor plating" the gums through a strengthening of the outer protective portion or keratin layer.

Men should use male sex hormone for best results, and women should use female sex hormone, but either hormone on either sex is effective.

Keratin is a horny substance which when present in normal deposits serves to protect the mouth against infection. The sex hormone treatment is used to supplement other treatment, but succeeded in some stubborn cases that were not helped by any other method.

"The keratin layer is necessary," Dr. Ziskin explained, "to maintain healthy gums, and may be lost or reduced in thickness in the presence of certain irritating factors. Such loss or reduction lowers resistance to bacteria which ordinarily could not penetrate, and opens the way for more serious involvements.

"Loss of keratin may result from local causes, such as tartar on the teeth, or from causes originating within the body, as for example, pregnancy."

"The new method does not promise to be a cure for tooth decay since gum disorders are not necessarily either the cause or the effect of diseases of the teeth. However, the presence of irritating factors in the teeth, such as tartar or cavities, can bring about inflamed gums. In so far as the gums are concerned, the application of sex hormones will be of assistance in the treatment of dental disorders."

Science News Letter, January 27, 1940

GENETICS

Chimp Has 48 Chromosomes, Same Number As In Man

CHIMPANZEES have the same number of chromosomes per cell as man, 48, it has been provisionally determined in a study reported (*Science*, Jan. 19), by Drs. C. H. Yeager and T. S. Painter of the University of Texas and Dr. R. M. Yerkes of Yale University.

Counting chromosomes in any of the higher vertebrates is an exceedingly difficult task, which probably accounts for the almost total lack of such counts, strongly contrasting with the voluminous records that have been piled up on chromosome studies in plants and lower animals, where counting is easier.

Science News Letter, January 27, 1940

MEDICINE—PSYCHOLOGY

"Men in White" Are Now Serving the Men With Wings

New Field of Aviation Medicine Guards the Health And Physical Fitness of Airline Pilots For Safety

WHITE-COATED surgeons, doctors, laboratory workers have taken over a new life-saving job. They are safeguarding the health of the men with wings who pilot the ships of the nation's airways. Indirectly, they are safeguarding your life on your vacation or business flights by making sure that the men who speed you through the air, day and night, are always mentally alert, keen-eyed and in such perfect physical condition that those human machines, their bodies, run as smoothly and perfectly as the engines that drive the plane.

The men and women of the white-coated army that serves the men with wings are following the newest of medical specialties, aviation medicine. Their duties are many. They make sure that the water supply used at all points is the best. They investigate conditions aloft, to learn how these may affect the health of pilots and passengers, and how harmful conditions can be overcome or prevented. They are leading the war on disease-carrying flies and mosquitoes that might stow away on intercontinental planes. Their keyword is prevention. Their first and foremost assignment, when serving in the medical department of an airline, is to maintain perfect health for the line's pilots.

Pilots join an airline physically fit in every respect. But the entrance examination which determines this fact is only the beginning. To maintain a physically alert condition, each pilot must undergo an equally exacting examination, complete in every detail, every 90 days.

Quarterly Examinations

Twice annually the pilots must appear before physicians of the Civil Aeronautics Authority who apply the federal yardstick to determine their physical fitness for flying. Then at semi-yearly intervals, halfway between the federal examination times, the pilots are given an even more comprehensive overhauling by the medical examiners of their own airlines.

In between, whenever they may miss only one scheduled flight because of illness or injury, they must come under the searching eye of the company examiner and obtain a clearance before they are again permitted to fly a plane.

Fine Clinic

The facilities for exacting and painstaking medical examinations of pilots by airlines are exemplified in the new 12-room laboratory and clinic United Air Lines has established in its general offices in Chicago. This clinic represents an investment of $15,000 in medical equipment alone. At least once a year each pilot on the United system is routed into Chicago for a personal examination by Colonel A. D. Tuttle, formerly commandant of the U. S. Army School of Aviation Medicine at Randolph Field, Tex., who is director of United's medical department. This super overhaul by Colonel Tuttle, personally, is in addition to the regular examinations taken locally.

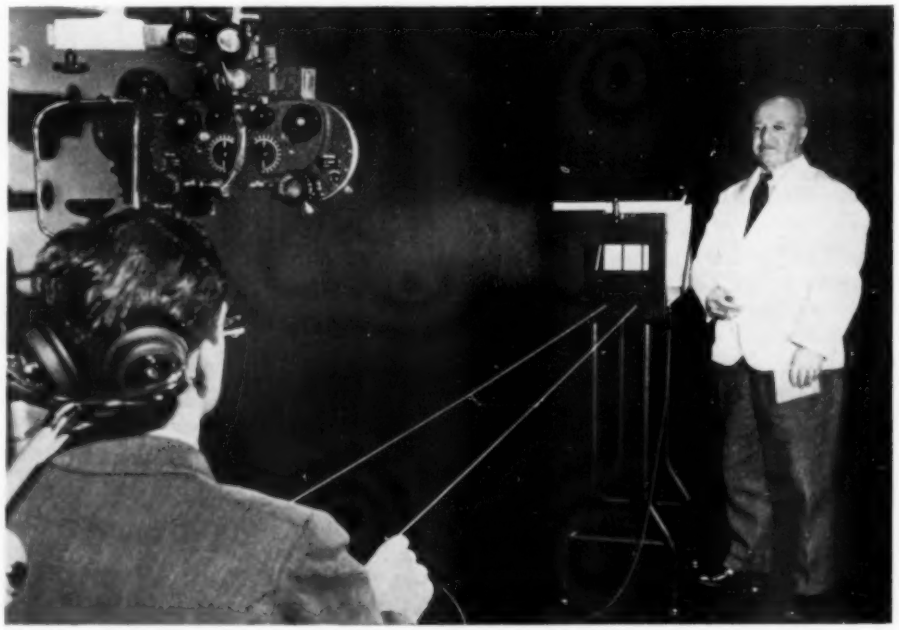
A typical test for a pilot takes more than two hours to complete. The data on their examinations, when completed, fill a 12-page worksheet on which there are 94 general and specific points, plus subheadings. In the eye examination, for example, there are 23 distinct steps, and 63 separate tests are made.

There are some "related" questions, too. For instance, what about the flier's diet? An insufficiency of Vitamin A affects the vision; makes for "night blindness."

For all practical purposes 20-20 is considered the "perfect" eye rating. All United pilots have to have at least 20-20 ratings, but a surprising number have better than "perfect" ratings and few wear glasses.

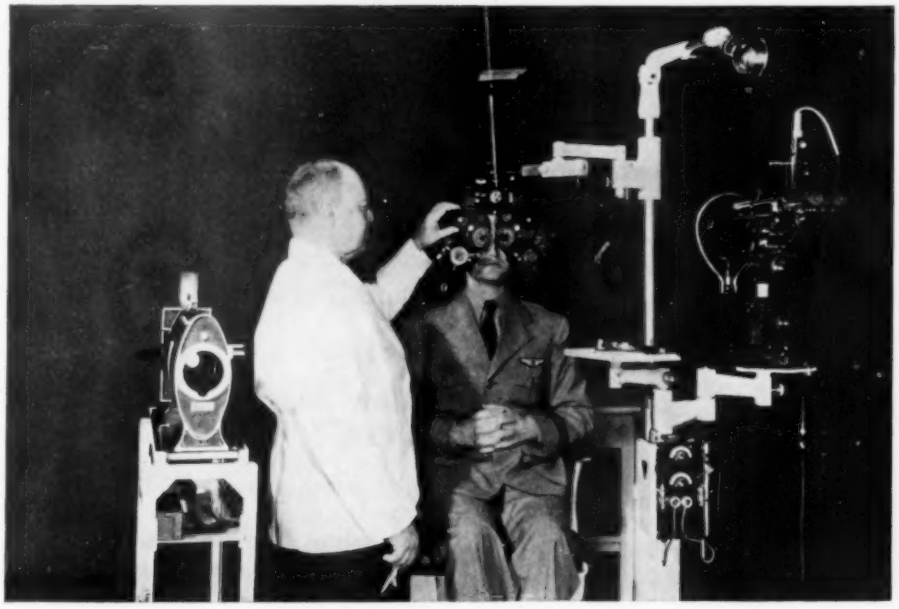
Eye Exercise

Among the numerous instruments necessary to check the vision is an ingenious device containing among other features a Phorometer hookup of Risley prisms and Maddox Rods, and a Rotoscope, which check the condition of the six pairs of tiny muscles controlling the movements of the eyeballs. When it is shown that any of the eye muscles lack tone and need exercise, the Rotoscope can be set to give the proper amount of stimulation. The fixing object is rotated in one direction for 30 seconds, then reverses itself and goes for 30 seconds in the other direction. As the eyes follow it throughout each rotary excursion, they,



DEPTH PERCEPTION

The pilot's ability to estimate distances from a third dimension standpoint is determined by depth perception tests. Col. A. D. Tuttle, medical director of United Air Lines, is shown (right) making such a test of a pilot's eyes.



NIGHT BLINDNESS TEST

The pilot's ability to see at night is determined by special tests in the medical department of the airlines. This shows the first step in such a test, in which the visual purple of the eye is bleached by three-minute exposure to bright light.

too, have to roll, thus getting the necessary exercise.

Another instrument will detect the amount, if any, of night blindness in the pilot's eyes. He is instructed to stare at a special light for three minutes to bleach the "visual purple" from his eyes. This exhaustion of "visual purple" is what happens to automobile drivers at night when they are blinded by glare from the lights of approaching cars. After the "visual purple" is bleached, all lights except a small one of very low luminosity are extinguished. The pilot then sits in the dark and watches for the small dim light to return and he is required to distinguish the axis on which it is set. A stop watch is used to determine whether he can correctly identify the position of the test object in not more than three minutes.

Judging Relative Distance

The pilot also is examined for depth perception, or stereoscopic vision, into which a third dimension factor enters. The ability of a pilot to perceive objects in relief and correctly estimate their relationship to and distance from one another is especially important in taking off or landing a plane. In this test, from a distance of 20 feet, the pilot is required to align side by side, by manipulating the long cords attached to them, two small upright black rods, one of which is stationary and the other movable, located in a brightly illuminated box free of any shadows. The allowable margin of error averaged in a series of five trials is only 25 millimeters.

Hearing Test

An audiometer, or hearing, test booth is soundproof. Through the earpiece attached to the audiometer, the pilot is given a check on his ability to hear all sound frequency tones from 128 to 11,584 cycles within a normal decibel range. If the hearing is normal in every respect this test does not take longer than a minute to perform. But if the hearing seems defective, additional tests are conducted by the use of a microphone and phonograph records, which transmit signals and tones similar to those heard aloft. In the phonograph test some static is injected, too, in order to simulate the worst possible conditions aloft.

Sinuses, nose, throat, mouth and ears are looked into. The chest is examined under a fluoroscope and an X-ray film made for record purposes. An electrocardiogram is taken and the results filed and blood counts, hemoglobin estimations and Kahn tests taken. Even the lung capacity is tested by exhaling air into a spirometer and a basal metabolism test is made when the necessity for it is indicated.

The high point of a pilot's examination, though, probably is the Schneider Index, a circulatory efficiency test peculiar to aviation medicine. The Schneider Index seeks out borderline unfitness that may be reflected in the behavior of the cardiovascular system under rest and exertion. The pilot to be examined rests for five minutes after which a pulse count and blood pressure reading is taken. Then the pulse and blood pressure standing is taken. Then he exercises by stepping up and down on a bench 18 inches high five times in 15 seconds, at the end of which the pulse is counted and the elapsed time, in terms of seconds, for a return of the pulse rate to the standing rate also is recorded. His score is computed by a point system, ranging from a maximum of plus 18 to a minimum of minus four for the six steps which comprise the test. Athletes will average about 14, the average man 12, women about two points less than men, and psychoneurotics or the emotionally unstable eight or less. Most pilots score between 12 and 16; some of them 18.

Home Stations

Along United's transcontinental airways system there are nine domiciliary stations where pilots and plane crews make their homes, Newark, Chicago, Denver, Cheyenne, Salt Lake City, Seattle, Portland, Oakland and Los Angeles. Physicians at these points look after the physical welfare of these employes, and when anything special shows up a report is dispatched to Colonel Tuttle's medical center in Chicago where it is decided whether to bring the case in for checking and observation or to direct appropriate remedial action at the home station. Thus the more than 250 pilots of United Air Lines are constantly kept in topnotch physical condition throughout their flying careers.

Other airlines also have their own armies of men and women in white whose chief job is to safeguard the pilots' health, although often the medical departments of the various airlines cooperate with other medical men in research on the problems of aviation medicine.

Science News Letter, January 27, 1940

● Earth Trembles

Information collected by Science Service from seismological observatories resulted in the location by the U. S. Coast and Geodetic Survey of the following preliminary epicenter:

Tuesday, January 16, 8:14.7 p. m. EST

About 350 miles off Guam in the Pacific. Latitude, 17 degrees north. Longitude, 148 degrees east. Severe shock.

For stations cooperating with Science Service, the Coast and Geodetic Survey, and the Jesuit Seismological Association in reporting earthquakes recorded on their seismographs, see SNL, Oct. 28.

PHYSIOLOGY

Anti-Bleeding Property Gained in the Lungs

THE LUNGS are the chemical plant where human blood acquires the clotting property that keeps normal people from bleeding to death after a slight cut or injury, Drs. William DeW. Andrus, Jere W. Lord, Jr., and Joseph T. Kauer have discovered in experiments at New York Hospital and Cornell University Medical College. (*Science*, Jan. 12)

In this breathing apparatus the platelets of the blood, as they disintegrate, "initiate the first stage of the clotting process by releasing thromboplastin, which, in the presence of calcium, changes prothrombin to thrombin," Dr. Andrus and associates suggest. Thrombin is what chemists call a ferment. It acts on fibrinogen to form fibrin, the essential portion of the blood clot.

The liver, the New York investigators believe, is the place in the body where prothrombin is formed. This chemical ancestor of blood-clotting thrombin is formed continuously in the liver, it is believed. The site of its transformation into thrombin has apparently never before been located.

Science News Letter, January 27, 1940

RADIO

Radio Typewriter Operated Simultaneously With Sound

LATEST development in the static-less frequency modulation system of radio developed by Maj. Edwin H. Armstrong, which is challenging present supremacy of the giant network, operating on the conventional amplitude modulation:

Extraordinarily faithful sound, music, speech, etc., plus signals to operate a 100-words-per-minute radio typewriter are broadcast simultaneously on the same FM channel without interference with each other, forecasting radio stations of the future that will add to present conventional sound programs a volume of news reports, stock figures, a typewritten information service.

Multiplexing of an FM channel down in the ultra shortwave or megacycle region of radio at a wavelength of about 7 meters or 43,200 kilocycles means that two channels instead of one can add to the familiar broadcasting service—a radio-typewriter as demonstrated in Washington, or a facsimile service, or a radio-photo service or (what is most exciting of all to ordinary radio listeners) stereoscopic sound which means that what is happening on an orchestra stage or at a great public gathering can be projected into your home wtih perspective sound. You'd be able to follow an actor as he walks across the stage; you'd be able to tell that the drums are on one side of a symphony orchestra and the harp on the other.

Just now frequency modulation is asking a little more room in the ether . . . in the area of the radio spectrum that was waste and unwanted a few years ago. In a band of 5 megacycles, FM could duplicate the present broadcast services. In one television channel 30 FM channels find plenty of room. The FCC is being asked to give a little more space to FM. In the 40 to 120 megacycle region where FM is most effective, 56% of the space is assigned to television, 31% to government use, 9.5% to amateur and only 2% to FM.

FM broadcast stations can themselves relay programs around the nation without land wires once stations are established at about 40-mile intervals, a fact that has cost-saving implications. The transmitting stations cost less for FM than for conventional radio. Maj. Armstrong predicts the receivers will be no more costly once the demand comes. He should know since he is daddy of the superheterodyne and the regenerative circuits so essential to ordinary receivers.

Science News Letter, January 27, 1940

CHEMISTRY

Transparent Belts Made From an Elastic Plastic

THOSE transparent belts now on sale, which are strangely and slowly elastic, are made from one of the few plastics that are elastic. Most of the synthetic substances, used in large variety and quantity, that are called plastics are rigid and solid materials, plastic only during manufacture when their ability to change shape is of great advantage.

The chemical stuff from which the transparent and vari-colored belts are made is one of the polyvinyl resins made from natural gas, coal, oil, salt and air. Better than leather and rubber in many respects, it is flexible and tough as well as elastic. It will not oxidize nor crack, nor is it affected by mold, mildew, water or perspiration. Heat is used to join two pieces together simply and rapidly. The belts are almost the same sort of material as the polyvinyl layer in the new high-test safety glass sandwich.

Science News Letter, January 27, 1940

IN SCIENCE

BOTANY

Daffodils Big as Plates From Thiamin Solutions

DAFFODILS with blossoms as large as salad plates. Red tea roses with five-inch buds. Extremely dilute solutions of Vitamin B_1 (thiamin) in water used on growing plants produced such effects in researches at the California Institute of Technology.

In human beings this vitamin prevents and cures the serious nervous disorder known as beri-beri. In garden and field it is also useful. In addition to making plants grow vigorously and producing abnormally large flowers, this vitamin allows the transplanting of flowers and trees at any season. Concentrations as low as one part in 100,000,000 prevent "root shock" when flowers, shrubs, and trees are transplanted.

Science News Letter, January 27, 1940

MEDICINE—PHYSIOLOGY

Heart Disease Remedies Act Like Gland Hormone

DISCOVERY that medicines used in heart disease, such as digitalin and strophanthin, can to a certain extent double for the life-essential hormone of the adrenal gland cortex has apparently given scientists a new clue to the chemical composition of this gland substance which is a life-saver for Addison's disease patients.

The heart disease remedies prolonged the life of animals lacking adrenal glands, Dr. Raymund L. Zwemer and Bertrand E. Lowenstein, of the College of Physicians and Surgeons, Columbia University, report. (*Science*, Jan. 19) From this fact and others gleaned in their latest studies, they conclude that the gland hormone may be a glycoside just as the plant extracts digitalin and strophanthin are.

Patients suffering from Addison's disease, in which the adrenal gland cortex fails to produce enough of its hormone, have been helped by a synthetic chemical made in Switzerland which scientists believe from its effect on the patients is the same as the hormone from the gland. This synthetic chemical has been called desoxycorticosterone acetate.

Science News Letter, January 27, 1940

E FIELDS

METALLURGY

Electricity Helps Polish Metal in Newest Process

GETTING a high polish on metals without use of "elbow grease" is achieved by a new process developed at the Battelle Memorial Institute in Columbus, Ohio. Shiny surfaces of mirror quality are produced by the use of chemical solution and electricity.

A multitude of industrial applications are foreseen for the new process. It has the great commercial advantage of being much less costly than other methods of polishing.

Ordinary pieces of steel, nickel, copper, brass and zinc, just as they come from the mill, can be treated to give smooth reflecting surfaces that are even superior in quality to polishes obtained in the past by much harder work.

Along with the polishing, the metals are given a protection against corrosion that, while skin deep, is nevertheless effective.

The treatment is the reverse of the usual electroplating. The electricity takes metal away and leaves it polished, instead of adding a metallic layer as in ordinary plating. The solution used is strongly oxidizing in order to eat away the minute high spots of the metal surface. This solution also is the factor that causes the surface to be less susceptible to tarnish and corrosion.

Electrolytic polishing can be applied to intricate stamped metal articles, castings, wrought metal objects, wire and all sorts of metallic forms, many of which can not be polished by the older methods.

Science News Letter, January 27, 1940

ARCHAEOLOGY

Pig Latin and Love Songs Found on Pompeii's Walls

"UTSNAY" (meaning nuts), scrawls the smart modern youngster in Pig Latin.

Two thousand years ago young Pompeiians were doing exactly the same thing, twisting words like urbanum around into "anumurb" and reversing their names. Only theirs was real Pig Latin, based on Latin itself.

"Particularly interesting" is the verdict on this childish practice, by Helen H. Tanzer, who has just published an archaeological report on "The Common People of Pompeii" (The Johns Hopkins Press), based on the irrepressible habit Pompeiians had of scrawling on walls.

Archaeologists call the doodling of the ancients "graffiti." Pompeiians were so addicted to wall scribbling that no less than 15,000 graffiti have been uncovered for archaeological study in the ruins.

A Pompeiian with time on his hands and a sharp nail would write—what?

Well, he might get his political views out of his system.

He might show off by writing a classical quotation, badly spelled.

He might write his opinion, good or bad, of some inn's food, or the barber nearby.

Lines from popular songs were in his thoughts, and were amusing to scrawl. Love songs were as flowery as any crooner's ditties today. Sample: "Any one could as well stop the winds from blowing and the water from flowing as stop lovers from loving."

For archaeologists like Miss Tanzer, there is a mine of information in all this about occupations and customs of a famous city and a flash of insight into its psychology. Pompeii in the shadow of Vesuvius had its fun.

Science News Letter, January 27, 1940

PHYSIOLOGY

Seals Store Oxygen Supply In Hemoglobin of Muscles

SEALS, which can swim under water for six minutes or more without coming up for air, apparently store a big reserve of oxygen in the hemoglobin of their muscles. Research suggesting this possibility is reported by Douglas Robinson of Harvard University.

Mr. Robinson made a quantitative analysis of a sample of harbor seal muscle for hemoglobin, and found that it contained about seven times as much of this oxygen-holding compound as an equal weight of beef muscle. A calculation of the total oxygen that a seal could take under water, in lungs, blood, body fluids and muscle, indicated enough to last the animal 14.4 minutes if it did not move. This should be enough for six minutes of active swimming.

One observer, however, has reported an actively swimming immersion by a seal, of 15 minutes. For this, says Mr. Robinson, "there still seems to be no physiological explanation."

Science News Letter, January 27, 1940

MEDICINE

Find New Pneumonia Germ And Make Serum for It

DISCOVERY of a new kind of pneumonia germ, responsible for more illness than some of the other types, and development of a serum for detecting its presence and treating its victims are announced by the New York City Department of Health and Lederle Laboratories, Inc.

The germ is called pneumococcus Type 33. Hitherto scientists have recognized 32 types of pneumonia germs, following the classification by the late Dr. Georgia M. Cooper, N. Y. C. Department of Health.

The newest one, Type 33, was isolated by Dr. Jesse G. M. Bullowa, of Harlem Hospital's pneumonia service, and was at first called the Wilder strain. Numerous specialists during the pneumonia season of 1937-1938 reported that they were encountering penumonia in their patients which, though the germs seemed to be related to Type 9 pneumococci, did not respond to treatment with Type 9 pneumonia serum treatment. The germs, isolated by Dr. Bullowa, and by other investigators in the United States and abroad, were studied in the New York City health department laboratories where they were designated as a new type of penumonia germ.

Serum for diagnosis and treatment of this type of penumonia infection has been prepared by Lederle Laboratories, and reports since it has been in use show that it is a more frequent causative agent of pneumonia than some of the established higher types.

Science News Letter, January 27, 1940

AGRICULTURE

Female Paper-Mulberry Is Really Weaker Sex

LATEST in the battle of the sexes in the plant world: the female of the paper-mulberry tree, that supplies paper to Asiatics and clothes to South Sea Islanders, is not so hardy as the male when transplanted to the U. S. A.

In this tree, as in many others, the male or staminate trees are not capable of carrying on the species. There must be female trees nearby to bear strange flowers and mulberry-like fruit. Prof. E. A. Andrews of Johns Hopkins University finds that male trees survive as far north as New York but the females disappear farther south than Baltimore. So he asks: "Is the female of the species more tender than the male?" (*Science*, Jan. 12)

Science News Letter, January 27, 1940

ASTRONOMY

Five Evening Stars

February To Bring Parade of All Planets Visible Without Optical Aid and Brightest of Others in Row

By JAMES STOKLEY

WHEN we talk about "evening stars," or "morning stars," we never really refer to stars. That word is now confined to mean a distant sun, a glowing globe of gas, shining with its own light, like the sun around which the earth and other planets revolve.

The evening or morning star is always a planet. The apparent daily motion of the sky from east to west is an effect of the earth's turning from east to west. Therefore, a planet that happens to be to the east of the sun follows in its daily journey, and sets after sunset. Then it is visible in the evening, and we call it an "evening star."

But on other occasions the same planet will be to the west of the sun. Then it will go down before sunset, and not be seen in the evening. But, since it precedes the sun in its daily motion it rises before sunrise. It is visible in the morning, and is a "morning star."

Generally the planets are more or less evenly divided, and it is very unusual to have them all on one side or the other simultaneously.

That, however, is what February brings. At the end of the month all five of the planets that can be seen with the naked eye, as well as the brightest of those that are seen only with a telescope, will be lined up at one time in the western sky, all visible like beads on a string. This is an exceedingly rare event, and it should be watched for in the last few days of February, and the first few in March.

Look to the West

As one looks to the west, in the gathering dusk, Mercury will be seen near the horizon. Above, a little to the south, and a little brighter, will shine Jupiter. Close above this, and still brighter, will be Venus. Considerably fainter, above, and to the south, will appear Saturn, and above this, and still fainter, though brighter than any nearby star, Mars will shine, with a red color. And a little higher yet, and farther south, Uranus will be situated, visible with a small telescope. The five naked eye plants will be within 45 degrees of each other, so they will surely make a magnificent display.

In fact, at this time, all the plants will be in the same half of the sky. Pluto, the most distant, which is seen only with a very powerful telescope, is to the east in the figure of Cancer, the crab. And Neptune, the next one in, occupies a place in Virgo, the Virgin, and rises just before Mercury sets.

On the accompanying maps the stars of the February evening are shown as at 10 o'clock on the first, 9 o'clock on the 15th and 8 o'clock on the 29th. The three planets that are shown are placed the way they will be on the 15th. On the first of the month Mars will be between Jupiter and Saturn. It passes the latter on the thirteenth.

Of the stars, Sirius is brightest, in Canis Major, the great dog, but Orion is the finest constellation visible. The three stars which form the warrior's belt make it easy to locate. Above, and to the right, is Aldebaran, in Taurus, the bull, which Orion is supposed to be fighting. Regulus, in Leo, the lion, is to the east, in the so-called "sickle." It marks the end of the handle.

Great Bear

To the north the great dipper, part of Ursa Major, the great bear, is swinging into a better position than it has been in for several months, with the handle hanging downwards. To the northeast is the W-shaped figure of Cassiopeia, the queen. Between her and the dipper is Polaris, the pole star.

When they view the planets in their unique February arrangement, many persons will wonder about these neighbors of the earth. What are they like? Are they inhabited?

To the latter question, the astronomer usually answers, "No." It seems very doubtful that any sort of intelligent life, even remotely resembling anything that we know, could exist on any of them. The farthest science will go is to admit that green areas regularly appear and disappear on Mars, and that these behave as if they were areas of vegetation.

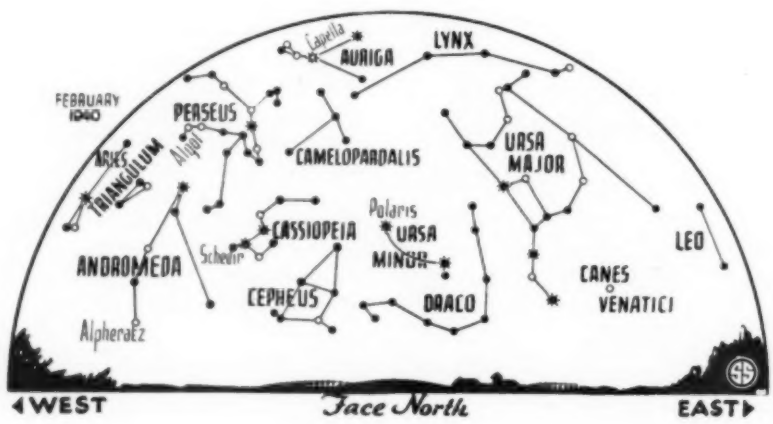
After all, life as we know it requires a very delicately balanced set of conditions. The temperature must be right, not too hot and not too cold. Even here on the earth we find extremes in places where we cannot live.

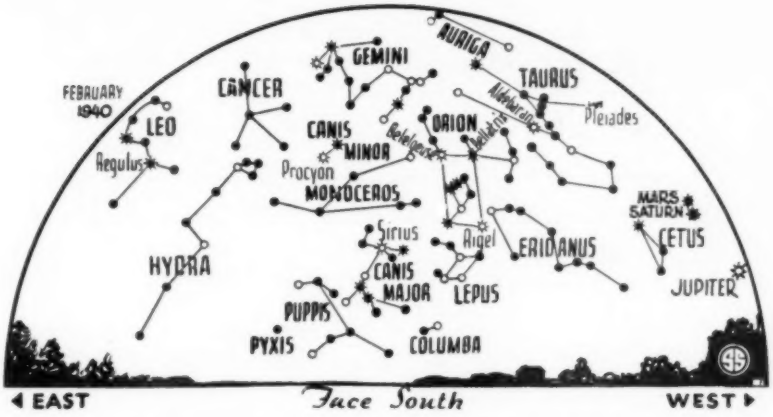
There must be an atmosphere of the right density and composition. If it does not contain enough oxygen, we cannot breathe. If it is too thin, as on the top of a high mountain, we cannot use it. Too dense an atmosphere would also be unsuitable.

Air Has Weight

Air seems almost the lightest thing we know, but it does have weight, and a common experiment in elementary physics is to wiegh a copper globe before and after the air has been exhausted from it, for there is really a marked difference.

Furthermore, it is the gravitational force of the earth that holds our atmosphere around this planet. The moon, being much smaller than the earth, has much less gravitational force, and things would weigh less there than they do here. The force of gravity on the moon is not enough to hold an atmosphere. If some superhuman power were to endow it





SYMBOLS FOR STARS IN ORDER OF BRIGHTNESS

with one, it would soon float off into space!

The same thing is true of the planet Mercury. Also, Mercury is only a little more than a third as far from the sun as we are, and it is very hot. It is hot enough, on the part of Mercury which faces the sun, for lead to melt, so that planet hardly seems to be a suitable place of habitation.

Venus is almost as big as the earth, and the force of gravity is nearly as great as it is here. It has an atmosphere, but one that is continually laden with clouds, of which we see only the tops, and through which we cannot penetrate to see the surface of the planet. The temperature above these clouds is about ten degrees below zero Fahrenheit, but, of course, it may be much warmer below. However, spectroscopic studies have revealed no trace of water vapor or oxygen in this atmosphere, so the chances of life there seem rather slight.

Mars Farther Off

Mars this month is not nearly so close as it was last July, and that is why it is now so faint. Mars has an atmosphere, for sometimes clouds can be observed in them. But there also no water vapor or oxygen has been detected. However, there may be slight amounts, though too little to produce an effect that we can find. The white areas, which come and go around the poles of Mars, are probably polar caps of ice or snow, and these would put small amounts of moisture into the air. The green areas which appear in the Martian springtime, and vanish in the autumn and winter, behave like vegetation. There may be vegetable life on Mars, though it is hard to imagine animal life, and especially intelligent animals.

Jupiter and Saturn are both so far out from the sun that the temperatures there are very low. They have atmospheres, but of methane and ammonia, poison gases on earth. They could hardly be the abode of life, even if it could be acclimated to the extreme cold. Uranus and Neptune, telescopic planets, are believed to be similarly constituted, and even colder. Pluto, the present most distant known planet, is much smaller, probably no bigger than Mercury, so it is too small to have atmosphere, and in addition is colder even than Neptune. It seems, therefore, that the planet earth is the only one in the solar system which we are sure is inhabited by intelligent life—and sometimes we have reason to doubt even its intelligence.

Celestial Time Table for February

Monday, Feb. 5, 1:58 a. m., Algol at minimum brightness. **Wednesday, Feb. 7,** 10:47 p. m., Algol at minimum. **Thursday, Feb. 8,** 2:45 a. m., New Moon; 9:08 p. m., Moon passes Mercury. **Saturday, Feb. 10,** 7:36 p. m., Algol at minimum; 9:00 p. m., Moon farthest, 252,400 miles from earth. **Sunday, Feb. 11,** 4:11 p. m., Moon passes Venus. **Monday, Feb. 12,** 9:32 a. m., Moon passes Jupiter. **Tuesday, Feb. 13,** 3:00 a. m., Mars passes Saturn; 4:26 p. m., Algol at minimum; 9:55 p. m., Moon passes Saturn; 10:53 p. m., Moon passes Mars, about two lunar diameters to the south. **Thursday, Feb. 15,** 2:20 p. m., Moon passes Uranus. **Friday, Feb. 16,** 7:55 a. m., Moon at first quarter. **Tuesday, Feb. 20,** 5:00 p. m., Venus passes Jupiter, two lunar diameters to the north. **Friday, Feb. 23,** 4:55 a. m., Full moon; 5:00 p. m., Moon nearest, 221,900 miles from earth. **Saturday, Feb. 24,** 4:21 p. m., Moon passes Neptune. **Sunday, Feb. 25,** 3:43 a. m., Algol at minimum. **Tuesday, Feb. 27,** during evenings of next week remarkable planet display seen in west after sunset. **Wednesday, Feb. 28,** 6:00 a. m., Mercury farthest east of sun, seen as evening star about this date. **Thursday, Feb. 29,** 9:35 a. m., Moon in last quarter.

Eastern Standard Time throughout.

Science News Letter, January 27, 1940

PHYSICS

Neutral Meson Particle Needed to Explain Forces

A NEW kind of atomic particle that would make "triplets" out of the "twin" meson particles found in cosmic rays, is suggested by the man who worked out the theory of how the sun keeps shining, Prof. Hans A. Bethe, Cornell University physicist.

Prof. Bethe has been applying his skill in mathematical physics to calculations on how meson particles—having 200 times the mass of ordinary charges of electricity, the electrons—can be used to explain nuclear forces. These attractive forces within the nucleus help hold all atoms, and hence all matter, together and form a sort of "cement" that binds together the atomic building blocks of the physical world.

That meson particles might exist and have the role of transferring energy between nuclear particles was first suggested in 1935 by the young Japanese physicist Yukawa. This was before the particles were actually found in cosmic radiation.

For an atom to liberate a meson particle would require from 80,000,000 to 100,000,000 electron volts of energy, Prof. Bethe's calculations show. This is far beyond any energies yet available in the laboratory through bombardment by giant machines for smashing the atom.

The new triplet kind of meson, yet unfound but needed to explain more fully nuclear forces, would be without an electrical charge, says Prof. Bethe. Mesons with positive and negative electrical charges—the twins—are already known.

Science News Letter, January 27, 1940

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ENGINEERING

Auto Industry Contemplates Use of Polarized Light

Engineering Problems of Switchover Are Major Ones And Require Considerable Testing Before Adoption

HOW the automobile industry might solve the problem of introducing polarized headlights to eliminate night-driving glare was described to the Society of Automotive Engineers, Detroit, by P. J. Kent, chief electrical engineer, Chrysler Corporation.

An agreement among manufacturers to install polarized lights on new cars after a given date would be the initial step. At the same time demountable polarizing screens for old car windshields could be made available to allow the beneficial polarizing, glare-eliminating effect for them also.

However, Mr. Kent pointed out, it would probably also be necessary to have new cars equipped, for a few years at least, with a standard beam-depressing switch so that their strong headlight rays could be lowered in meeting old-type cars. This depression of the beam would be needed until the old cars came to a lingering death and the end of their usefulness.

Polarizing screens on headlights and windshields would be "crossed" so that the polarized light rays could be extinguished and glare eliminated.

Still debatable, said Mr. Kent, is the question of whether headlight intensity would have to be stepped up with the introduction of polarized beams. The polarizing screens cut the light intensity emitted by the headlight some 60%, he pointed out. It has been suggested that brighter headlights could overcome this absorption and also surmount the additional absorption of 60% encountered in the windshield screens.

The engineering problems involved in the switchover to polarized headlights are major ones, Mr. Kent concluded, and require considerable testing before they can possibly be applied to all automobiles.

The problem is by no means as simple as the introduction of safety glass in cars, for polarizing the headlight beams can only gain its effectiveness if all cars possess the new invention. The benefits of safety glass, in contrast, were real and tangible immediately on its installation in any single car without respect to others.

Science News Letter, January 27, 1940

Safety Fuels for Planes

A NEW type of safety gasoline for aviation that would be no more volatile than kerosene and hence less hazardous from the explosion standpoint, was described to the Society of Automotive Engineers, Detroit, by Robert E. Ellis and William J. Sweeney, Standard Oil Development Company.

Back in the days when the U. S. Navy had the *Akron, Macon* and other great airships, safety fuels were seriously considered, the scientists pointed out. These airships were inflated with helium to decrease their fire risk and Naval scientists were seeking a gasoline which vaporized only a little and could be used to cut the kill hazard from fuel still further.

The disasters to Naval airships and the urge for superior high-octane gasolines for airplanes were twin reasons why interest in safety fuels diminished after 1932, although in that year the capacity for the production of such safety fuels reached tank car lots.

New advances in petroleum refining since 1932 have, however, made it possible to produce safety fuels with very high octane (anti-knock) rating up to 100 octane number.

These safety fuels have a flash point, the temperature at which their vapors will ignite, of 100 degrees Fahrenheit. In contrast, the flash point of many gasolines is below room temperature and, in some cases, is as low as minus 30 degrees Fahrenheit.

Scientists Ellis and Sweeney, in their analysis of crude petroleum sources suitable for making safety gasolines, find that if the proper equipment were installed, a production of 10,000,000 barrels of such fuels could be produced each year, an amount sufficient for aviation's needs for many years to come.

Stopping point for the immediate introduction of these new safety gasolines is that they cannot be burned in an ordinary type of engine using a carburetor. It is necessary to supply the fuel to the engine by injection methods.

Science News Letter, January 27, 1940

Diesel Airplane Engines

NEW DIESEL airplane engines of the 1,000 horsepower class now developed in Europe can compete successfully in performance with gasoline engines of comparable power, Paul H. Wilkinson, consulting engineer, told the Society of Automotive Engineers, Detroit.

Seeking out first-hand information in France, Germany, England and Holland just before the outbreak of the current European War, Mr. Wilkinson inspected the factories and latest engine designs of these nations.

From his authoritative information, Mr. Wilkinson compared for his fellow engineers the performance of the new liquid-cooled B. M. W.-Lanova Diesel of Germany with top ranking American air-cooled motors using gasoline of 87 octane (standard on airlines), 90 octane and 100 octane (used on military planes). These American motors were, respectively, the Pratt & Whitney Twin Wasp SC3-G, the Wright Cyclone 102A and the Pratt & Whitney Twin Wasp S1C3-G.

Mr. Wilkinson concludes that the new German Diesel can compete on a basis of parity with American 87-octane motors

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and "in all probability with engines operating on 90-octane and 100-octane gasolines."

Science News Letter, January 27, 1940

ARCHAEOLOGY

Secret Room in Palace Baffles Archaeologists

PAGE Sherlock Holmes! British archaeologists digging out the ruins of a 3,700-year-old palace in Syria, have encountered a mystery room, suggesting the secret, hideaway chambers of whodunit fiction. And to date, the archaeologists have not solved the mystery.

Discoverer of the baffling scene is Sir Leonard Woolley, famous for his explorations at Ur of the Chaldees, and more recently director of British Museum excavations in North Syria.

Exploring a royal palace buried 25 feet under the soil at Atchana, ancient Alalakh, Sir Leonard found a flight of stairs leading to a basement level and barred at the foot by a low stone door. The door, cracked and broken, still could be turned on its hinges. Behind it lay enough evidence to conjure up thoughts of strange macabre doings in palace life of an ancient, unknown king.

Seen now, only the most enduring remnants of the secret are visible. Outstanding object is an oblong wooden box, collapsed, in which were packed four skeletons. In a corner of the room is a heap of ashes from a wood fire, and with it, bones of animals and some stone and clay vases. The designed secrecy of the barred room is emphasized by surrounding rooms, all for household routine.

Alalakh, scene of this palace mystery, is otherwise proving very enlightening to archaeological science. From its buried palaces, temples, statues, and pottery, seven stages of ancient history are coming to light, including much information about the little-known Hittite era. Alalakh in Syria was no provincial place. It had contact with civilizations of Egypt, Asia Minor, Mesopotamia, Cyprus and Crete.

Science News Letter, January 27, 1940

● RADIO

Dr. Albert F. Blakeslee, director of the department of genetics, Carnegie Institution of Washington and newly elected president of the American Association for the Advancement of Science will tell why people behave differently as guest scientist on "Adventures in Science" with Watson Davis, direcor of Science Service, over the coast to coast network of the Columbia Broadcasting System, Thursday, February 1, 4:15 p.m., EST, 3:15 CST, 2:15 MST, 1:15 PST.

Listen in on your local station. Listen in each Thursday.

PUBLIC HEALTH

Mayo Clinic Authority Urges Speed in Better Medical Care

Approaching Presidential Election Brings Danger That Problem Will Become a Political Football

A WARNING that we must now make haste in working out plans for better medical care distribution, to avoid having the problem become a political football, is issued by Dr. Hugh Cabot, of the Mayo Clinic, in his book, *The Patient's Dilemma* (Reynal and Hitchcock).

Dr. Cabot incidentally criticizes the American Medical Association for failing, in its handling of economic, social and political problems relating to medicine, to maintain its high standards and the judicious and judicial qualities which have characterized its handling of scientific problems. But Dr. Cabot's chief concern is in solving the patient's dilemma of being unable to find or to pay for good medical care.

The approaching presidential election makes speed essential, Dr. Cabot points out, if the problem of getting medical care to all the people is to be solved by sound plans.

With large bodies of people convinced and certain to state clearly their convictions that some change in medical care distribution is overdue, "the time appears to me," Dr. Cabot says, "to be short during which good-tempered discussion can hold the floor.

"Once the issue is joined between the political parties, action—possibly hasty—may well result," he warns.

No formula for solving the problem exists, Dr. Cabot says. Disagreeing with proponents of compulsory health insurance, he states that while there is "much foreign experience to guide our footsteps, there is no foreign formula which can be applied—even in its general principles."

"The entrance of government into the distribution of medical care," he continues, "must have as its first step a secure foundation in the provision of a good personnel, good standards, and expert supervision."

Dr. Cabot seems to favor solving the problem largely at the state level. He says there is much to be gained by regarding the states "as a series of experimental laboratories." Local initiative, local financing with state grants-in-aid to communities needing it, a single state administrative channel and state maintenance of standards are the principles he suggests for plans for medical care under government auspices.

Establishment and maintenance of fundamental standards, however, can only be

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done by the federal government, in his opinion. The federal government should also be responsible for expert determination of the relative needs of various portions of the country, he suggests, and he favors following the "well-established principle that the more prosperous portions of the country should give aid and assistance to their less prosperous neighbors."

A federal department of health with a Secretary of Health in the Cabinet, often proposed, is viewed with some alarm by Dr. Cabot. While he favors a single agency to administer all problems in the field of education, research and medical care in which the federal government is involved, he thinks these problems should be combined under the U. S. Public Health Service which in turn should be under some major department of government. This will insure the supremely important permanency of tenure, detachment of view and freedom from political influence which might be threatened by setting up a Department of Health with a Secretary in the Cabinet.

Science News Letter, January 27, 1940

PUBLIC HEALTH

Public Health Service Warns Venereal Disease Quackery

Men and Women Who Are Infected or Fear They Are Found To Be Swindled Out of Tens of Millions Yearly

MEN and women who have, or think they have, syphilis and gonorrhea are today being exploited to the tune of tens of millions of dollars annually, the U. S. Public Health Service charges on the basis of a new survey of drug store "back counter prescribing" and other aspects of venereal disease quackery.

Instead of going to reputable physicians or clinics, these unfortunate men and women are going to quacks such as "men's specialists," and herbalists or drug stores for diagnosis and treatment of venereal disease. They are paying, the federal health service finds, from $1 to $3 for a bottle containing a few cents' worth of such substances as boric acid and glycerin which cannot help them if they have syphilis or gonorrhea, and in some cases they may be paying for medicine for a disease they do not even have.

The increase in venereal disease quackery in recent years today constitutes "one of the major obstacles to the public health control of syphilis and gonorrhea," federal health officials stated in a nation-wide broadcast.

Quack advertising has apparently decreased in volume, but the sales curve for "patent remedies" has been rising during the past six or eight years, the latest survey indicates. This survey was made by the American Social Hygiene Association in cooperation with the U. S. Public Health Service.

Personal interviews by trained investigators posing as "friends" of presumably infected persons were carried on in 1,151 drug stores in 35 cities in 26 states. Sixty-two percent of the drug stores visited diagnosed the disease and offered to sell remedies for alleged syphilis or gonorrhea, especially the latter. Thirty-one percent did not attempt to diagnose, but stocked and were willing to sell bottled remedies, especially when asked for them by name. About half of those who sold remedies urged the inquirer to see a doctor. Only 7 percent of the entire number refused to diagnose or sell remedies.

Science News Letter, January 27, 1940

OCEANOGRAPHY

War Hampers Ice Patrol Through Radio Silence

WAR has cast a new shadow of danger over ships plying North Atlantic steamer lanes, by hampering the work of the International Ice Patrol. This patrol, which usually begins in late March, is conducted by special U. S. vessels but is internationally sponsored, and it depends for full efficiency on radio reports from merchant ships sighting icebergs. Now, to avoid being located by Nazi submarines, all British and French vessels, and many neutral ships as well, maintain complete radio silence.

A statement in the *Hydrographic Bulletin* issued by the U. S. Navy Department takes cognizance of this situation, and requests that "In the interests of safety to shipping in general, the Hydrographic Office would appreciate receiving reports of ice sighted by such ships, immediately upon arrival in port."

Science News Letter, January 27, 1940

AERONAUTICS

Canada To Fit New Skis To Military Aircraft

CANADA is getting ready to fit skis of a new type to its high-speed military aircraft. Tests have been underway at Sioux Lookout, Ontario, where winter temperatures are low and snow conditions suitable. The new airplane skis have low sliding resistance, little tendency to freeze to the surface and high resistance to wear.

Science News Letter, January 27, 1940

PUBLIC HEALTH

Illness, Poverty Linked In Country as in City

POOR health and poverty go together in the country as well as in cities. This long-suspected situation has just been confirmed by U. S. Public Health Statistician Harold F. Dorn. Scanning death reports from Ohio's agricultural regions, he found the standardized death rate in the poor economic areas 10% greater than in good economic areas.

Science News Letter, January 27, 1940

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WILDLIFE

NATURE RAMBLINGS
by Frank Thone

Unafraid

WILDLIFE is supposed to become gun-shy very easily. That is true, but only where the birds and beasts find that the guns are being consistently pointed at them. If the hunters are after game of their own species and let the wild things alone, they soon increase and multiply and possess No Man's Land in astonishing numbers.

It is an old story of the World War, how rabbits swarmed between the lines; and the tragic John McCrae told how, in the sky over Flanders fields, "The larks, still singing bravely, fly, scarce heard amid the guns below." The point seems to be, that without the visitation of death upon themselves, the terrible noise of death means nothing to these innocents of the fields and woods.

Even to man's pets and familiars, dogs, cats, and canaries, as well as to those ever-present intruder-guests the rats, the din of battle brings no terror. Troops in the field have their mascots and their pets; and working animals like carrier pigeons and police dogs seem to be less disturbed by the uproar than are the soldiers themselves.

A tale is told of a canary, carried, as such birds frequently were, as a living gas indicator (canaries detect gas long before human beings can) by an officer of English engineers. By accident the bird escaped, and flew out over No Man's Land, where it perched upon a limb and sang.

That made it necessary to kill the poor bird, because if the Germans saw it they would know something was afoot in the lines opposite and call for a barrage. So a sniper opened fire. But a canary is a tiny target for an army rifle. The bird paid no attention to the sniping, until one bullet barely missed it. Then it flew out a little farther.

Finally, in sheer desperation, the officer telephoned to the battalion trench mortar section. The gravity of the situation created by the unterrified little bird was understood. A heavy fire of mortar projectiles was suddenly directed at the tree —and tree, bird and all vanished in a sheet of flame.

But it took the fire of a whole trench-mortar section to make one bird stop singing.

Science News Letter, January 27, 1940

OCEANOGRAPHY

Dropping Depth Charges For Peaceful Purpose

AN AMERICAN ship will be dropping depth charges in the North Atlantic for the next six weeks, but they will not have anything to do with the European war. The ship is the *Atlantis,* research vessel of the Woods Hole Oceanographic Institution.

Her depth charges go clear to the bottom and explode there, setting up small earthquake-like waves which are picked up by specially constructed seismographs, also resting on the bottom. The records will give information regarding the nature and thickness of the rock layers that form the ocean bed. The method was invented by Dr. Maurice Ewing, young Lehigh University geologist.

Unlike the gray-painted or camouflaged warships, that are made as nearly invisible as possible, the *Atlantis* is painted white, purposely to make her conspicuous. The *Hydrographic Bulletin,* U. S. Navy, advises all shipping to give her a wide berth in order not to interfere with her scientific work.

Science News Letter, January 27, 1940

GENERAL SCIENCE

Research By Industry Is $215,000,000 Business

INDUSTRIAL research is fairly big business in the U. S. A. Approximately $215,000,000 was spent during the past year by 2,000 individual companies.

A survey by Dr. William A. Hamor, Mellon Institute of Industrial Research's Associate Director, showed that 32,000 scientists and engineers are engaged in industrial research, half of them in chemical, petroleum and electrical laboratories. Some 16,000 more persons backed up these scientists and engineers as assistants or clerical workers.

Leading investors in research during 1939 were du Pont with a research budget of $7,000,000 and Dow Chemical Company spending $1,400,000 on research.

About 110 individual companies in the field of chemical industry and forty trade associations make research grants to educational institutions. Approximately 200 college laboratories are used incidentally for industrial research and commercial testing. About 250 manufacturing corporations are sustaining long-range investigations in research foundations. While many companies with no laboratories of their own turn to the 250 commercial laboratories in this country.

Science News Letter, January 27, 1940

PHYSICS

Complementary Lighting A Trick for Black-Outs

THE NIGHTLY "black-outs" in the European war have covered Europe's factory windows with all sorts of paint, often necessitating use of artificial light during the day. One trick in England is the use of complementary lighting instead of complete obliteration of windows.

Acting on well-known optical principles, the windows are turned into blue filters which will not pass orange light. The lamps used give orange light free from any blue rays. The lamps may be sodium vapor lamps or gas-filled lamps made of suitably colored glass or ordinary lamps suitably lacquered. Just as photographers acquire skill working under red and green light of low intensity, so factory workers get used to the yellow light. (*Nature,* Dec. 16)

Science News Letter, January 27, 1940

Plant Experiments
THE WORLD'S MOST FASCINATING HOBBY

GROW PRIZE-WINNERS
CREATE UNHEARD OF PLANTS
IN GARDEN - HOUSE - CLASSROOM

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•First Glances at New Books

Medicine

RECENT ADVANCES IN MEDICAL SCIENCE, A Study of their Social and Economic Implications—Sir Edward Mellanby—*Cambridge (Macmillan),* 62 p., 75c. A stimulating discussion of accomplishments and still unsolved problems which should do much, as the author suggests, to restore to the despairing men and women of today "a firmer belief in the power of the human intellect to guide their destiny."

Science News Letter, January 27, 1940

Economics

WELTANSCHAUUNG, SCIENCE AND ECONOMY—Werner Sombart; translated by Philip Johnson—*Veritas Press,* 60 p., $1. A leading theorist of the new German school of economics states his credo in condensed form. Outstanding is the thesis that Marxism and Liberalism are alike invalid, especially that the materialistic doctrine of economic determinism is outmoded; and that *"Geist"* (but in a strictly secular sense) will guide the economics of the future.

Science News Letter, January 27, 1940

Economics

CONTROL OF FEDERAL EXPENDITURES, A Documentary History, 1775-1894—Fred Wilbur Powell, comp.—*Brookings Inst.,* 928 p., $5. A compilation of the significant materials, official and unofficial, underlying the financial history of the United States during approximately its first century.

Science News Letter, January 27, 1940

Archaeology

THE COMMON PEOPLE OF POMPEII, A Study of the Graffiti—Helen H. Tanzer—*Johns Hopkins Press,* 113 p., $3. See page 57.

Science News Letter, January 27, 1940

Medicine

THE PATIENT'S DILEMMA, The Quest for Medical Security in America—Hugh Cabot—*Reynal & Hitchcock,* 284 p., $2.50. See page 61.

Science News Letter, January 27, 1940

Psychology

SEE YOURSELF AS OTHERS SEE YOU—David Seabury—*Whittlesey House,* 354 p., $2.50. A book in popular style for those who like self appraisal.

Science News Letter, January 27, 1940

Photography

HANDBOOK OF PHOTOGRAPHY—Keith Henney and Beverly Dudley, editors—*Whittlesey,* 871 p., $7.50. Twenty-three specialists have contributed to this reference volume for the shelves of the more serious photographers. In addition to the chapters on techniques and theory of photography there are several on photography in special fields such as astronomy and geology.

Science News Letter, January 27, 1940

Child Study

EVALUATIONS OF ADOLESCENT PERSONALITY BY ADOLESCENTS—Caroline McCann Tryon—*Society for Research in Child Development, National Research Council,* 83 p., $1.

Science News Letter, January 27, 1940

Psychology

A COMPARATIVE STUDY OF THE SYSTEMS OF LEWIN AND KOFFKA WITH SPECIAL REFERENCE TO MEMORY PHENOMENA—Sylvia Hazelton MacColl—*Duke Univ. Press,* 160 p., $1.50. Lewin and Koffka are both exponents of Gestalt psychology, and this comparison of their "schools" will interest those who wish an understanding of modern ways of thinking in this science.

Science News Letter, January 27, 1940

Philosophy

NATURALISM—James Bissett Pratt—*Yale Univ. Press,* 180 p., $2. Here are published a series of lectures in philosophy delivered at Indiana University in 1938 by the professor of philosophy at Williams College. Naturalism is discussed in relation to life, evolution, mind, morality, and religion.

Science News Letter, January 27, 1940

Economics

THE AMERICAN WAY OF LIFE—George E. Sokolsky—*Farrar & Rinehart,* 188 p., $2. Frankly propaganda for private enterprise in the United States. "Upon this economy," says the author, "often called the capitalist system, depends the continuance of democracy in our country."

Science News Letter, January 27, 1940

Physiology

HORMONES IN INVERTEBRATES—Bertil Hanström—*Oxford Univ. Press,* 198 p., 13 pl., $4.25. As compared with the almost limitless flood of publication on hormones in vertebrates, the literature on the same class of secretions in invertebrates seems a mere trickle. Students of comparative physiology, as well as special workers in the various invertebrate phyla, will therefore have a special welcome for this compact but comprehensive and well-organized book. A valuable added feature is the 38-page bibliography.

Science News Letter, January 27, 1940

General Science

SCIENCE IN OUR MODERN WORLD; Book I, Understanding Science, 432 p., $1.28; Book II, Science for Daily Use, 500 p., $1.48; Book III, Science for Human Control, 588 p., $1.68—Ralph K. Watkins and Winifred Perry—*Macmillan.* Fortunate, indeed, are the children who get their first introduction to science through these books. With simplicity, breadth, thoroughness, impetus toward experimentation, attractive illustration and curiosity-tickling questions, they should not only make science in school pleasurable but give the next generation a chance to understand the world about it to a greater extent than does the adult world today.

Science News Letter, January 27, 1940

Philosophy

THE PROSPECTS OF PHILOSOPHY—John J. Rolbiecki—*Benziger,* 174 p., $2.50. By one who has taught philosophy for twenty years and is a member of the staff of the Catholic University of America's School of Philosophy, the thesis is that since the time of Descartes the line of cleavage between science and philosophy has been growing more and more marked.

Science News Letter, January 27, 1940

Psychology

HOW TO THINK STRAIGHT—Robert H. Thouless—*Simon and Schuster,* 246 p., $2. A modernized and Americanized version of a much read book by the head of the department of psychology at Glasgow University. It is filled with examples from current conversations of crooked thinking and the dishonest tricks of those who try to influence without logic.

Science News Letter, January 27, 1940

Ethnology

THE PULSE OF THE PUEBLO—Julia M. Seton—*Seton Village Press, Santa Fe,* 249 p., $2. Readable and thought-provoking little stories of modern Indians, and their frequently strange encounters with the white man's ideas. Mrs. Seton presents them, to show that real Indians are kindly, human, and "worth-while."

Science News Letter, January 27, 1940

Engineering

MACHINE SHOP WORK (5th ed.)—Frederick W. Turner, Oscar E. Perrigo; Aldrick Bertrand, rev.—*American Technical Soc.,* 416 p., $2.75. The details of the machinist's art given in excellent textbook form. Diagrams and photographs make pertinent points clearer.

Science News Letter, January 27, 1940